

## Crack and Cocaine

Cocaine is a powerfully addictive stimulant drug. The powdered, hydrochloride salt form of cocaine can be snorted or dissolved in water and injected. Crack is cocaine that has not been neutralized by an acid to make the hydrochloride salt. This form of cocaine comes in a rock crystal that can be heated and its vapors smoked. The term “crack” refers to the crackling sound heard when it is heated.\*

Regardless of how cocaine is used or how frequently, a user can experience acute cardiovascular or cerebrovascular emergencies, such as a heart attack or stroke, which could result in sudden death. Cocaine-related deaths are often a result of cardiac arrest or seizure followed by respiratory arrest.

### **Health Hazards** ———

Cocaine is a strong central nervous system stimulant that interferes with the reabsorption process of dopamine, a chemical messenger associated with pleasure and movement. The buildup of dopamine causes continuous stimulation of receiving neurons, which is associated with the euphoria commonly reported by cocaine abusers.

Physical effects of cocaine use include constricted blood vessels, dilated pupils, and increased temperature, heart rate, and blood pressure. The duration of cocaine’s immediate euphoric effects, which include hyperstimulation, reduced fatigue, and mental alertness, depends on the route of administration. The faster the absorption, the more intense the high. On the other hand, the faster the absorption, the shorter the duration of action. The high from snorting may last 15 to 30 minutes, while that from smoking may last 5 to 10 minutes. Increased use can reduce the period of time a user feels high and increases the risk of addiction.

Some users of cocaine report feelings of restlessness, irritability, and anxiety. A tolerance to the “high” may develop—many addicts report that they seek but fail to achieve as much pleasure as they did from their first exposure. Some users will increase their doses to intensify and prolong the euphoric effects. While tolerance to the high can occur, users can also become more sensitive to cocaine’s anesthetic and convulsant effects without increasing the dose taken. This increased sensitivity may explain some deaths occurring after apparently low doses of cocaine.

Use of cocaine in a binge, during which the drug is taken repeatedly and at increasingly high doses, may lead to a state of increasing irritability, restlessness, and paranoia. This can result in a period of full-blown paranoid psychosis, in which the user loses touch with reality and experiences auditory hallucinations.

Other complications associated with cocaine use include disturbances in heart rhythm and heart attacks, chest pain and respiratory failure, strokes, seizures and headaches, and gastrointestinal complications such as abdominal pain and nausea. Because cocaine has a tendency to decrease appetite, many chronic users can become malnourished.

Different means of taking cocaine can produce different adverse effects. Regularly snorting cocaine, for example, can lead to loss of the sense of smell, nosebleeds, problems with swallowing, hoarseness, and a chronically runny nose. Ingesting cocaine can cause severe bowel gangrene due to reduced blood flow. People who inject cocaine can experience severe allergic reactions and, as with all injecting drug users, are at increased risk for contracting HIV and other blood-borne diseases.

### ***Added Danger: Cocaethylene***

When people mix cocaine and alcohol consumption, they are compounding the danger each drug poses and unknowingly forming a complex chemical exper-

iment within their bodies. NIDA-funded researchers have found that the human liver combines cocaine and alcohol and manufactures a third substance, cocaethylene, that intensifies cocaine's euphoric effects, while potentially increasing the risk of sudden death.

## ***Treatment*** ———

The widespread abuse of cocaine has stimulated extensive efforts to develop treatment programs for this type of drug abuse.

One of NIDA's top research priorities is to find a medication to block or greatly reduce the effects of cocaine, to be used as one part of a comprehensive treatment program. NIDA-funded researchers are also looking at medications that help alleviate the severe craving that people in treatment for cocaine addiction often experience. Several medications are currently being investigated for their safety and efficacy in treating cocaine addiction.

In addition to treatment medications, behavioral interventions—particularly cognitive behavioral therapy—can be effective in decreasing drug use by patients in treatment for cocaine abuse. Providing the optimal combination of treatment and services for each individual is critical to successful outcomes.

## Extent of Use ———

### **Monitoring the Future (MTF) Survey\*\***

There were no significant changes from 2005 to 2006 in the proportion of students in 8th, 10th, and 12th grades reporting lifetime,\*\*\* past year, or past month use of powder cocaine; however, past year crack use among 10th-graders declined significantly, from 1.7 percent in 2005 to 1.3 percent in 2006.

Past year prevalence of powder cocaine use in 2006 among all three grades was not significantly different from 2001; however, significant declines in crack use were seen over the same time period among 8th- and 10th-graders.

**Use of Cocaine in Any Form by Students, 2006  
Monitoring the Future Survey**

	8th-Graders	10th-Graders	12th-Graders
Lifetime	3.4%	4.8%	8.5%
Annual	2.0	3.2	5.7
Past month	1.0	1.5	2.5

**Crack Cocaine Use by Students, 2006  
Monitoring the Future Survey**

	8th-Graders	10th-Graders	12th-Graders
Lifetime	2.3%	2.2%	3.5%
Annual	1.3	1.3	2.1
Past month	0.6	0.7	0.9

### **Community Epidemiology Work Group (CEWG)\*\*\*\***

Cocaine-related death mentions in 2005 were greater than 100 in the following CEWG areas that reported local mortality data: Philadelphia (423), Detroit/Wayne County (325), Miami-Dade County (162), Broward County, Florida (136), Newark/Essex County (135), St. Louis (103).

Primary cocaine treatment admissions in 2005 accounted for approximately 50 percent of treatment admissions, excluding alcohol, in Atlanta, 41 percent in Broward County, Florida, and between 33 and 35 percent in Detroit, Philadelphia, St. Louis, and Texas.

### **National Survey on Drug Use and Health (NSDUH)\*\*\*\*\***

In 2005, 33.7 million Americans aged 12 and over reported lifetime use of cocaine, and 7.9 million reported using crack. About 5.5 million reported annual use of cocaine, and 1.4 million reported using crack. An estimated 2.4 million Americans reported current use of cocaine, a significant increase from the previous year, and 682,000 reported using crack, which was also significantly higher than in 2004 (467,000). There were an estimated 872,000 new users of cocaine in 2005 (approximately 2,400 per day), and most were aged 18 or older although the average age of first use among recent initiates age 12 to 49 was 19.7 years.

The percentage of youth ages 12 to 17 reporting lifetime use of cocaine was 2.3 percent in 2005. Among young

adults aged 18 to 25, the rate was 15.1 percent, showing no significant difference from the previous year.

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\* Snorting is the process of inhaling cocaine powder through the nose, where it is absorbed into the bloodstream through the nasal tissues. Injecting is the use of a needle to release the drug directly into the bloodstream; any needle use increases a user's risk of contracting HIV and other blood-borne infections. Smoking involves inhaling cocaine vapor or smoke into the lungs, where absorption into the bloodstream is as rapid as by injection.

\*\* These data are from the 2006 Monitoring the Future survey, funded by the National Institute on Drug Abuse, National Institutes of Health, DHHS, and conducted annually by the University of Michigan's Institute for Social Research. The survey has tracked 12th-graders' illicit drug use and related attitudes since 1975; in 1991, 8th- and 10th-graders were added to the study. The latest data are online at [www.drugabuse.gov](http://www.drugabuse.gov).

\*\*\* "Lifetime" refers to use at least once during a respondent's lifetime. "Past year" refers to use at least once during the year preceding an individual's response to the survey. "Past month" refers to use at least once during the 30 days preceding an individual's response to the survey.

\*\*\*\* CEWG is a NIDA-sponsored network of researchers from 21 major U.S. metropolitan areas and selected foreign countries who meet semiannually to discuss the current epidemiology of drug abuse. CEWG's most recent reports are available at [www.drugabuse.gov/about/organization/cewg/pubs.html](http://www.drugabuse.gov/about/organization/cewg/pubs.html).

\*\*\*\*\* NSDUH (formerly known as the National Household Survey on Drug Abuse) is an annual survey of Americans age 12 and older conducted by the Substance Abuse and Mental Health Services Administration. Copies of the latest survey are available at [www.samhsa.gov](http://www.samhsa.gov) and from the National Clearinghouse for Alcohol and Drug Information at 800-729-6686.

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